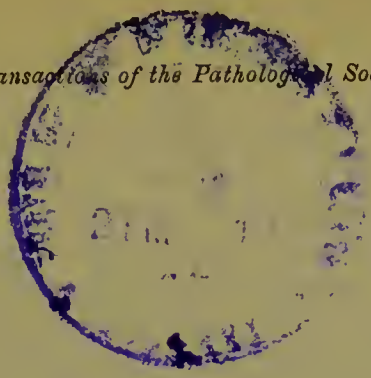
Reprinted from the 'Transactions of the Pathological Society of London,' 1890.



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Myoma of the uterus becoming sarcomatous.

By Alban Doran.

[With Plate XII, figs. 1 and 2.]

The possible conversion of a uterine "fibroid" into a malignant tumour is a subject of high pathological importance. The specimen now exhibited may throw some light upon the question.

M. H—, aged 31, single, was admitted into the Samaritan Hospital, under the care of Mr. J. Knowsley Thornton, in January, 1890. The left side of the lower part of the abdomen was occupied by a soft, elastic, moveable tumour, which extended to the outer side of the right rectus muscle, to about one inch above the umbilicus and far into the left loin. The uterus lay behind and somewhat to the left of the pelvic part of the tumour, with which it was closely connected. The catamenia had always been regular, except four years ago, when the tumour was first noticed. Then for six months the flow occurred at irregular intervals; afterwards, till admission, the period became regular and was attended with pain. Mr. J. Malcolm, who first took notes of the case, could not trace any history of cancer. The patient stated that "father's people had tumours." Her father was killed by accident at the age of sixty-seven; her mother, aged sixty-one, was alive and healthy. None of her six brothers and sisters had tumours.

Four years before admission the patient suffered from severe pains in the left side of the abdomen, with irregular menstruation. Since then occasional attacks of pain occurred, the most severe taking place in December, 1889. During the first attack a lump was discovered in the left iliac fossa. A year later it caused dysuria, which entirely passed away. Recently this lump had increased in size to a marked degree. There were no enlarged glands in the groin, nor elsewhere.

The operation was performed on January 25th, 1890. The abdo-

minal walls, I observed, bled very freely when the incision between the recti was made. This evidence of abnormal vascularity of the parietes, rare in any form of ovarian tumour unless intimate parietal adhesions exist, is the rule in cases of ordinary uterine "fibroid." In this instance the vascularity was extreme. Here it may conveniently be noted that there were no adhesions nor evidences of peritonitis—a fact interesting in regard to the vascularity of the parietes and the history of frequent attacks of pain since the appearance of the tumour. When the peritoneal cavity was opened a dull red tumour bearing enormous superficial veins came in sight. It looked somewhat like a pregnant uterus, and differed greatly in appearance from a common uterine "fibroid." It formed a very elongated oval body, free from any irregularity of surface. The fundus uteri was continuous with its inferior aspect. The tumour was removed, together with the uterus and appendages, the stump being secured by the wire of a Koeberlé's *serre-nœud*. The patient recovered.

The tumour measured eight and a half inches in transverse, and four in vertical diameter, and nearly four inches antero-posteriorly in its thickest part. It weighed 2 lbs. 12 oz. after much blood had drained away. The capsule was formed of uterine tissue. The tumour was entirely solid. On section the cut surface became at once very convex, much blood exuding from it. This surface was of a uniform very pale yellow colour, and looked absolutely homogeneous in texture. I could detect no patches of softened or calcified tissue, no area of hæmorrhage, no cysts, and no sinuses. Immediately after the tumour was removed I cut away some pieces for microscopic examination. The section now exhibited was prepared for me by Mr. Edgar Willett.

The tumour was practically an expansion of the fundus, lying in its walls which thus formed the capsule. Elsewhere the uterine walls were soft and very thick, entirely free from interstitial fibroids. Thus the tumour was solitary. A phlebolith, in appearance like an oval, semi-transparent, yellow pebble one eighth of an inch long, lay under the serous coat of the uterus posteriorly.

The section exhibited this evening presents features of considerable interest. Pure fibrous tissue is practically absent. Uterine muscle-cells abound. They form thick bundles, and each cell is very elongated, and bears a long, narrow ("staff-shaped") nucleus.

Groups of cells of a different type are present. They are quite as distinct as the muscle-cells, but shorter and much thicker. The nuclei are distinctly oval and wide in the middle. The two varieties of cell above described are represented in Mr. Lewin's drawings (figs. 1, 2, Pl. XII).

The short thick cells resemble those which make up a typical spindle-celled sarcoma. I do not believe that they are pure muscle-cells merely altered by softening of the stroma, although that softening undoubtedly exists in this section, but to a very trifling extent. Uterine muscle-cells do not usually become short and thick when the stroma around them softens, and their nuclei do not then assume a distinctly oval form, the outline remaining clear. On the contrary, the cells, normally very straight or even rigid in appearance, tend to twist and curl, and the elongated nuclei fade more or less. When uterine muscle-cells hypertrophy they retain their stiff appearance, and the nuclei remain staff-shaped. A fine drawing illustrating hypertrophy of a myoma during pregnancy will be found in the 'Transactions of the Obstetrical Society,' vol. xxx, 1888, p. 417, fig. 3, illustrating my paper on "Myoma and Fibro-myoma of the Uterus, and Allied Tumours of the Ovary." In some of the other illustrations appended to the same contribution, muscle-cells in different degrees of perfection of type are faithfully delineated by the same artist.

From the history of this case and the microscopic appearances of sections of the tumour, it appears justifiable to suspect that the growth, a pure myoma at first, was in an early stage of sarcomatous degeneration. Taking the most favorable view of the case, we may term the tumour a "soft fibroid," a growth at least semi-malignant in character. Such a growth is not checked by removal of the appendages, nor does it usually decrease in size after the menopause. Von Winiwarter speaks of tumours where the "younger" portions contain true sarcoma-cells. "Clinically these tumours do not act like the much more frequent myomata, but like sarcomata."[1]

In considering this case in relation to others already published, we may put aside all where the tumour was a primary fibro-sarcoma or pure sarcoma devoid of any capsule; or where there was more or less hæmorrhage or protrusion of a broken-down tumour into

[1] 'Billroth's General Surgical Pathology and Therapeutics,' Dr. Hackley's translation, 1884.

the uterine cavity or vagina, or where two or more of the above conditions existed together. Gusserow[1] and Winckel[2] give copious references to such cases.

It is rather upon the malignant degeneration of uterine myomata that the present specimen throws some light. Cancerous changes may be briefly dismissed. Liebman, of Triestc, has described a case[3] of myo-carcinoma where secondary deposits, partly made up of well-marked plain muscle-cells, developed in the lungs. What has occasionally been recorded as cancerous degeneration was more probably the invasion of a "fibroid" by cancer, beginning in the uterine mucous membrane or elsewhere. Mr. Roger Williams describes a case of colloid cancer of a uterine fibro-myoma in the 'Transactions' of our Society (vol. xxxvii, 1886, p. 354). Although he concludes that the cancer "really originated in the fibro-myoma," he traces the origin of the new growth to utricular glands embedded in the fibro-myoma. This theory does not imply degeneration of the original tumour in any sense. Dr. A. Martin, of Berlin, believes that no authentic case of cancerous degeneration has ever been recorded.[4]

Concerning sarcomatous degeneration Gusserow (loc. cit.), a very careful observer, speaks with caution. "The fact that there is no closely recorded case where a uterine sarcoma possessed a capsule, like that in the majority of fibro-myomata, is important in respect to the question of the metamorphosis of fibro-myoma into sarcoma." He adds in a foot-note, "Winckel removed a great tumour, which consisted of a fibrous capsule 8 to 15 cm. thick, and a mixed sarcoma, bigger than a child's head, easily isolated and capable of entire enucleation."

Several pathologists, including Virchow and Schröder, believe that sarcoma, or at least fibro-sarcoma, is generally if not always developed from myoma or fibro-myoma. In a series of 205 operations for the removal of "fibroids" of the body of the uterus by Dr. Martin,[5] four of the tumours were intra-parietal, well-capsulated myomata becoming sarcomatous. Hence Dr. Martin has no

[1] 'Die Neubildungen des Uterus,' 1872.

[2] 'Lehrbuch der Frauenkrankheiten,' 1886 (the English translation does not contain tables of references).

[3] 'Centralbl. f. Gynäk.,' No. 17, 1889.

[4] 'Real-Encyclopädie der Gesammten Heilkunde,' art. "Uterus," 1890.

[5] 'Centralbl. f. Gynäk.,' 1888, p. 389.

doubt that this kind of degeneration may occur in "fibroids" independently of invasion of sarcoma from the mucous or peritoneal aspects of the uterine wall.

In cases recorded by Chrobak, Müller, Simpson, Schatz, Winckel, and others the sarcomatous fibro-myoma was either pedunculated, or protruded through the os uteri, or was beginning to ulcerate or suppurate, or had been subjected to surgical (or sometimes very unsurgical) interference, or (as in G. Müller's case) had been damaged by impaction in the pelvis. In the present case the tumour was of the "subperitoneal" variety, and had not been injured in any way. Terrier's "sarcome fasciculé"[1] occurred in a uterus infested with interstitial "fibroids," but evidence that it was a degenerated "fibroid" is wanting. In a sarcoma removed by Dr. Garrigues[2] the uterine cavity was free from disease, the mucous membrane not being involved. The most satisfactory case hitherto recorded of sarcomatous degeneration of a uterine myoma is Dr. David Finlay's, already published in the Society's 'Transactions.'[3] The case may profitably be compared with that now exhibited.

Dr. Finlay's patient was fifty-nine, twenty-eight years older than Mr. Thornton's. That the tumour was sarcomatous there could be no doubt. There were enlarged glands in the left groin and secondary deposits in the second left intercostal space, the "back of the neck," the small intestines, the fundus of the bladder, the base of the right lung, and the wall of the right ventricle. The primary tumour was partly broken down, the firmer portion resembled a "fibroid," but there were "here and there fleshy tracts of rather firm consistence." The patient died from a sudden attack of peritonitis which began eight days after admission into the Middlesex Hospital. Thus, in many respects, the case differed from that which is now under consideration.

On the other hand, Dr. Finlay's tumour was surrounded by a distinct capsule, rarely if ever seen in primary sarcoma, though constant in uterine myoma. The tumour now shown had a distinct

[1] 'Bulletin de l'Académie de Médecine,' 2e série, vol. x, 1881, p. 373.

[2] 'New York Medical Journal,' vol. xxxvi, 1882.

[3] 'Trans. Path. Soc.,' vol. xxxiv, 1883, p. 177, and pl. x. Mr. Callender's case (ibid., vol. ix, p. 327), to which Dr. Finlay refers, resembled the present case in many respects, but was more advanced; the pericardium, lungs, and sixth cervical vertebra contained secondary growths.

capsule. Dr. Finlay's patient "first noticed a hard swelling in the lower part of her belly fifteen years since, but suffered no inconvenience from it until quite recently, when it had seemed to increase more rapidly in size. . . . On admission, a tumour, which was hard, rounded, and prominent, was found occupying the lower part of the abdomen up to the level of the umbilicus." Now the metastatic deposits proved the malignant character of the tumour, and the microscopic appearances, as well as the history, indicated that it was primarily a myoma. In the present case the tumour was small four years before removal. Shortly before that event it increased to a marked degree. When the operation was performed it reached above the umbilicus and extended far into the left loin. A pure myoma or fibro-myoma does, no doubt, grow rapidly in exceptional cases; but, coupled with the microscopic appearances, the rate of increase in this case was very suspicious. In short, the present case represents an earlier stage of the condition described in Dr. Finlay's account of his specimen.

In the sections now exhibited I cannot find any indication of the precise origin of the sarcoma-cells. In the discussion which followed the exhibition of Dr. Finlay's case,[1] Mr. Eve questioned whether the spindle-cells were really sarcomatous spindle-cells, or whether they were not embryonic cells in course of development into muscular fibres. In some specimens of myosarcoma of the kidney shown before the Society,[2] Mr. Eve, as well as other observers, had been able to trace the development of striated fibres from the round cells by noting numerous intermediate forms. Dr. Dawson Williams pointed out that in the specimens of tumour of the kidney shown by him—the specimens, in fact, to which Mr. Eve referred—it was easy to note the coincident presence of the various forms of cells and fibres, but there was no proof that any transformation of the one into the other had occurred. Dr. Finlay replied that the presence of metastatic deposits seemed to separate his case from those to which Mr. Eve alluded. In connection with the above discussion I may note Dr. Pernice's cases[3] of malignant racemose tumour of the uterus (myosarcoma strio-cellulare uteri; rhabdo-

[1] 'Brit. Med. Journ.,' vol. i, 1883, p. 459.

[2] 'Trans. Path. Soc.,' vol. xxxiii, 1882, p. 317.

[3] 'Virchow's Archiv,' vol. cxiii, pt. 1; also 'London Medical Recorder,' 1888 p. 476.

myosarcoma uteri), described since the publication of Dr. Finlay's paper. In its early stages this tumour contains spindle-cells, some of which are striated, being, in fact, embryonic striped muscle-cells. When recurrent the tumour assumes all the appearances of a spindle-celled sarcoma, and none of its cells bear striæ.

In the present case some homologous change in development may explain the pathological appearances. At first the elements of plain muscle-cells were developed, and the development proceeded till muscle-cells were formed. Later on, following a law well known in relation to tumours of types that border on malignancy, some of the same elements never advance beyond their embryonic stage. This theory would explain the semi-malignant nature of a "soft fibroid," as well as the nature of a "fibroid" undoubtedly undergoing sarcomatous degeneration. The distinction between these two varieties of uterine tumour can hardly be defined in many cases, especially in that which forms the subject of this communication.

May 6th, 1890.

See Klebs-Strogonowa "Ueber das maligne Uterussarcom (Leiomyoma malignum uteri)" Arch. f. Geb. u. Gyn. Vol XVIII, p. 357 (Sep. 1903)

See Doran — Case Theresa Rayner 1904 — Brit. Gyn. Jour. Oct. 1903 in Hysterectomy for fibroid uterus.

Doyen et Lebret "Transformation sarcomateuse de fibrome de l'utérus avec noyaux de généralisation dans les poumons" Annales de Gyn. et d'Obst. Dec 1905. p. 512

Pitzenfrey "Drei seltene Geschwülste" Zeitsch. f. Geb. u. Gyn. Vol 67 (1910) p. 32 Intramuscular Lipomyxosarcom der vorderen Uteruswand. See p. 36 about "Uebergangsbilder" where were sarcoma-cells of several types (small-big spindle, giant &c. also lipoblasts in the fatty tissue

DESCRIPTION OF PLATE XII.

Figs. 1 and 2, in illustration of Mr. Alban Doran's paper on Myoma of the Uterus becoming Sarcomatous.

From drawings by Mr. H. K. Lewin.

FIG. 1.—Section of the tumour, showing bundles of well-formed plain muscle-cells. ($\frac{1}{8}$'' objective.)
FIG. 2.—Another part of the same section, showing shorter fusiform cells with large oval nuclei.

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Fig. 1